8 BIT DEN PRESENTS:

VIDEO GAME FIRSTS

THE BREAKTHROUGHS THAT BUILT GAMING.

THE FIRST BOOK DEDICATED TO VIDEO GAME FIRSTS.

CJ HUGHES

Video Game Firsts
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THIS IS A 20 PAGE PREVIEW. THE FULL BOOK CONTAINS MANY MORE FIRSTS AND IS APPROXIMATELY 175 PAGES.

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PRESS PLAY

My lifelong obsession with video games began when my father brought home an Atari 2600 in nineteen eighty-four. I was ten years old, and I played Yars' Revenge, Pitfall!, and Berzerk until my thumbs went numb.

Now, in my fifties, I've become nostalgic-my wife would say overly so-for the video games of my youth. After reading half a dozen books on the history of video games, I found myself wishing for one dedicated solely to the "firsts" that shaped the industry. This book is the result of discovering that none had yet been written.

While a few entries may spark debate among video game history buffs, I've done my best to ensure that each "first" is supported by careful research and cross-referencing. If I find any errors, rest assured I'll correct them in future editions- I welcome your input at cj@8BitDen.com

CJ Hughes

The entries found here run the gambit of platforms included under the modern, broad definition of "video game", so I feel a quick run down is in order.

THE EVOLUTION OF VIDEO GAME PLATFORMS (THE SHORT VERSION)

Purely Mechanical Games

These are the earliest forms of arcade entertainment, relying entirely on physical mechanisms such as gears, levers, and springs. They contain no electrical components beyond, possibly, a simple light bulb for illumination or a basic scoring counter.

Key Characteristic: Movement and interaction are governed purely by physics and mechanics.

Example: Traditional Pinball machines (before electronic scoring), various early shooting galleries.

Electro-Mechanical (EM) Games

Popular throughout the 1960s and early 1970s, EM games bridge the gap between purely mechanical games and digital ones. They use motors, lights, sound generators, and relays to create complex experiences, often featuring model cars, rotating backdrops, or optical projection systems. Crucially, they do not use a standard electronic screen or monitor.

Key Characteristic: Mix of mechanical parts and electrical components; no CRT monitor display.
Example: Sega's *Periscope* (1966), Sega's *Duck Hunt* (1969).

Mainframe/Minicomputer Games
Developed in academic or research settings from the late 1950s onward, these games ran on large, shared computer systems. They were typically non-commercial projects and were accessed via terminals, which used various displays, including teletypes (printing text) or specialized vector displays.

Key Characteristic: Academic environment; not mass-produced for profit; display varied from text-only to complex graphical displays.

Example: *Spacewar!* (1962), *Maze War* (1973).

Analog Video Arcade Games
These systems were the immediate predecessors to purely digital games. They used analog circuitry to generate visual signals directly onto an electronic display (usually an oscilloscope or modified television monitor). The game logic was based on continuous electrical signals rather than digital binary code.

Key Characteristic: Used continuous signals (analog); electronic screen display.

Example: *Tennis for Two* (1958, non-commercial prototype).

Digital Video Arcade Games
Starting in the early 1970s, these were the first commercial, mass-produced video games. They used dedicated digital logic circuits (or later, microprocessors) to create the game logic and control the on-screen action displayed on a Cathode Ray Tube (CRT) monitor.

Key Characteristic: Used digital binary code and logic chips; standard CRT monitor display; coin-operated for public use.

Example: *Computer Space* (1971), *Pong* (1972).

Home Console Games
These are dedicated electronic devices designed to be connected to a standard home television set for display. The technology evolved rapidly from simple analog systems to cartridge-based digital systems, and eventually to the powerful disc and downloadable systems of today.

Key Characteristic: Designed for home use; connects to a television set.

Example: Magnavox Odyssey (1972), Atari 2600 (1977), Nintendo 64 (1996).

Home Computer Games
With the rise of personal computers (Apple II, Commodore 64, IBM PC), software developers created games that ran on these highly programmable machines. The PC itself was a dual-purpose device for both productivity and entertainment.

Key Characteristic: Software runs on versatile, multi-purpose personal computers.
•**Example:** *Zork* (commercial release 1980), *King's Quest I* (1984).

Handheld Video Games
These devices are fully portable, integrating a screen, controls, and power source (batteries) into one unit. They range from simple LED/LCD games of the 1970s and 1980s to modern, high-powered portable consoles.

Key Characteristic: Portable, self-contained unit with integrated screen.

Example: Microvision (1979), Nintendo Game Boy (1989).

THE FIRST INTERACTIVE, ANALOG VIDEO GAME - 1958

Tennis for Two, created in 1958 by physicist William Higinbotham at **Brookhaven National Laboratory** in Upton, New York, was the first interactive, analog video game ever created. It included real time interactive game play, two handheld controllers, and a screen that refreshed. Designed to entertain visitors at the lab's annual public exhibition, the game ran on a custom-built analog computer and used an oscilloscope as its display. Players used two aluminum box controllers, each with a button and a dial, to hit a simulated ball back and forth over a net, viewed from a side perspective. Although it was analog and not widely publicized at the time, ***Tennis for Two*** is recognized as the first electronic game with a screen, predating more famous digital games like ***Spacewar!*** and ***Pong.***

Tennis for Two remained virtually unknown for over two decades after its creation in 1958. After being shown at a couple of open house events, the machine was dismantled, as Higinbotham considered it a novelty rather than a technological milestone. As a result, it received no media coverage or formal recognition at the time and faded into obscurity.

The game only resurfaced in the late 1970s and early 1980s, when the booming video game industry sparked interest in tracing the origins of the medium. Legal battles over video game patents-particularly those involving Magnavox, which held patents related to Ralph Baer's work on the ***Magnavox Odyssey***-prompted researchers and lawyers to investigate earlier examples of electronic games

that might serve as prior art. During this process, Higinbotham's work was uncovered, and he was contacted by journalists and historians seeking more information about his forgotten creation.

As Higinbotham began sharing details, including schematics and explanations of how ***Tennis for Two*** functioned, interest grew. In 1982, Creative Computing magazine published a feature on the game, introducing it to the public as a potential early ancestor of video gaming. Over time, its reputation grew, and in 1997, Brookhaven National Laboratory rebuilt and demonstrated a replica of the game, officially recognizing it as one of the first interactive electronic games ever created. Though it had no direct influence on commercial video game development, ***Tennis for Two*** earned its place in history thanks to a rediscovery fueled by legal curiosity and a growing interest in the roots of digital play.

SIDE QUEST - WHAT'S AN OSCILLOSCOPE ANYWAY?

An oscilloscope is an electronic instrument used to visualize electrical signals-typically as a wave or graph-on a screen, usually in real time. The first practical oscilloscopes emerged in the 1930s, and they used CRT (Cathode Ray Tube) technology to graphically display electrical signals as waveforms. These displays were analog and vector-based, meaning they drew images by moving the beam smoothly along paths (lines and curves) rather than using a grid of pixels like modern raster displays and CRT televisions.

DOWN THE RABBIT HOLE - ALAMOGORDO BEFORE ATARI

William Higinbotham also bridged two of the most profound technological shifts of the 20th century-the creation of the atomic bomb and the invention of the first interactive video game.

Higinbotham was a member of the **Manhattan Project**, the top-secret U.S. government initiative that developed the atomic bomb during World War II. He worked on electronic components used in bomb testing and was present at the first detonation of a nuclear weapon, known as the Trinity Test, in Alamogordo, New Mexico in July 1945. After the war, Higinbotham became an outspoken advocate for nuclear nonproliferation, warning against the arms race he had helped to initiate. He would go on to spend decades working in nuclear instrumentation for the Brookhaven National Laboratory, a government-funded research facility.

Curiously, history folded in on itself decades later near the very same New Mexico desert where Higinbotham witnessed the dawn of the atomic age. In 1983, **Atari**, then a flailing video game giant, buried thousands of unsold cartridges-including ***E.T. the Extra-Terrestrial***-in a landfill in Alamogordo, not far from the Trinity test site. The infamous "Atari dump" became symbolic of the video game crash that nearly destroyed the industry.

FIRST REAL-TIME ACTION, DIGITAL VIDEO GAME WITH VECTOR GRAPHICS - 1962

Spacewar!, developed in 1962 by a group of **MIT** students led by Steve Russell, was the first digital computer video game to use real-time vector graphics. It was created on the **PDP-1**, a minicomputer with a vector display, which allowed for sharp, crisp lines rather than the blocky pixels of later raster-based graphics. ***Spacewar!*** featured two spaceships maneuvering in a starfield, engaging in a dogfight while being affected by the gravitational pull of a central star. Though it was not a commercial product, ***Spacewar!*** laid the groundwork for future vector-based arcade games and is considered a seminal work in video game history. Its use of vector graphics was groundbreaking, offering smoother motion and more dynamic visuals compared to other early digital displays.

Tennis For Two also used vector graphics but it was an analog based game.

SIDE QUEST - SPACE, A CROWDED PLACE

In the late 1970s, ***Spacewar!*** inspired two significant vector-based arcade games developed by Larry Rosenthal that helped popularize classic spaceship combat gameplay. Rosenthal, an electrical engineer, was fascinated with the original 1962 **MIT** computer game after playing it during a campus visit. He recreated the game's core mechanics and developed custom vector graphics hardware to bring the smooth, line-based visuals to arcades.

In 1977, Rosenthal partnered with **Cinematronics**, a pioneering arcade game company known for vector graphics titles, to release this version under the name ***Space Wars***. Cinematronics handled the manufacturing and distribution, helping bring the game to a wider arcade audience. This arcade ***Space Wars*** faithfully captured the essence of the original game's two-player dogfighting and gravity mechanics, establishing itself as a standout title.

However, a dispute with Cinematronics led Rosenthal to partner with Vectorbeam, another company, to release the *exact same* game and hardware under the name ***Space War*** in 1978, highlighting Rosenthal's ownership of the underlying technology.

Other early video games that used the name "Space War" or a close facsimile included a port for an early, failed video game console called the **RCA Studio II**. Released in 1977, this version was a simplified, pixelated interpretation of the spaceship combat concept. Due to the limited hardware capabilities of the Studio II-only black and white graphics and simple sounds-this version was extremely basic, featuring minimal graphics and simple mechanics.

Then there was the version of ***Space War*** that was ported to the **Atari 2600**, the popular home console that defined a generation of gaming. This version was more advanced than the RCA Studio II version, featuring improved graphics and sound, closer in spirit to the original gameplay of

maneuvering spaceships in combat. The Atari 2600 ***Space War*** involved two players competing to shoot each other in a starfield with gravity effects, though it lacked the sharp vector graphics of the arcade originals.

FIRST COIN-OP AMUSEMENT GAME TO BE EXPORTED OUT OF JAPAN - 1966

Periscope, released by Sega. This large electromechanical game simulated a submarine torpedo attack, with players peering through a rotating periscope to aim at light-up targets representing enemy ships. Using motors, lights, and analog control systems, *Periscope* offered a highly immersive and interactive experience long before the arrival of digital video games. It was a major commercial success and played a pivotal role in shaping the arcade industry, becoming one of the first games to establish the 25-cent play standard and marking Sega's entry into the global arcade market.

FIRST USE OF A JOYSTICK IN AN ARCADE GAME - 1968

MotoPolo, released by Sega in early 1968, holds the distinction of being the first known arcade game to utilize a joystick controller. The electro-mechanical (EM) game was a driving simulation where players used a joystick to move miniature motorbikes across a playfield.

While the joystick in ***MotoPolo*** allowed simple directional control, the technology was quickly iterated upon. A year later, in 1969, Sega released another EM game, ***Missile***, which became the first arcade game to integrate a fire button directly onto the joystick controller itself. These early innovations in EM game design laid the crucial groundwork for the standardized joystick controls used in later arcade video games, such as ***Gun Fight*** (1975).

SIDE QUEST - THE ETOMOLOGY OF "JOY-STICK"

The term joystick is believed to have originated in the early days of aviation, around 1910-1912, where it referred to the control stick used by pilots to maneuver aircraft. Its first documented usage appeared in a 1910 diary belonging to British aviator Robert Loraine. While training at Louis Blériot's flight school in Pau, France, he referred to the aircraft's control column as the joy-stick. It is not known if Loraine coined the phrase or if it was already in use by fellow early aviation constituents.

The exact origin is still debated and is sometimes attributed to either French aviator Robert Esnault-Pelterie, who developed early flight control systems, or British pilot James Henry Joyce, though the latter connection is more anecdotal. The name likely combines "joy", symbolizing the thrill of flying, and "stick", referring to the control lever itself. Over time, the term expanded beyond aviation and was adopted into engineering and military contexts to describe control levers for machinery and vehicles.

By the 1970s, joystick had entered the world of electronics and video games, becoming the standard term for directional input devices used with arcade machines and home consoles-most famously the Atari 2600. Much like its early original use, the exact "first use" of the term to refer to a video game controller remains ambiguous. The November 1973 issue of Electronic Games magazine is often cited as one of the first accessible print references using “joystick” in the video game context, but it’s possible earlier uses exist in lesser-known newsletters or manufacturer documents.

NINTENDO'S FIRST ELECTRONIC GAME/TOY - 1969

Love Tester, released in 1969 and designed by Gunpei Yokoi, who would later go on to create the ***Game Boy.*** This novelty toy measured "romantic compatibility" between two people by using simple electronics to gauge skin conductivity; participants held metal sensors and each other’s hand, causing a meter on the device to display a love score.

Though basic, it marked Nintendo’s initial step into electronic products, moving beyond their traditional focus on playing cards and mechanical toys. It was followed in 1970 by the *Beam Gun*, a light-sensing toy developed in partnership with Sharp, which became Nintendo’s first electronic game-like device and helped pave the way for the company’s future in video game entertainment.

The *Nintendo Love Tester* is now a prized collectible of video game enthusiasts and often sells for hundreds of

dollars when one sporadically appears on Ebay.

SIDE QUEST - NINTENDO ENTERS THE ELECTRONIC TOY BUSINESS

After the release of the ***Love Tester in*** 1969, Nintendo began to explore the potential of electronic entertainment, marking the start of its transformation from a playing card and toy company to a pioneer in interactive technology. Nintendo launched the ***Beam Gun*** series in 1970, developed in collaboration with Sharp Corporation. These toys featured light-sensing photodiodes inside the gun that detected light flashes from specially designed targets when the trigger was pulled. Rather than emitting a beam, the gun registered signals from responsive targets, which reacted with sound effects, lights, or movement. Available sets included spinning cowboy figures, ducks, and gangster-themed shooting galleries. The *Beam Gun* series became Japan's first successful home light gun toy, establishing Nintendo's credibility in the emerging electronic toy market.

Throughout the 1970s, Nintendo expanded its lineup with more electromechanical innovations, including the ***Ultra Machine*** (a toy pitching device), the ***Ultra Scope*** (a periscope-like viewer), and the ***Laser Clay Shooting System***, a large-scale arcade shooting gallery installed in converted bowling alleys. These products combined mechanical ingenuity with electronic interactivity and helped Nintendo refine its approach to user engagement and entertainment technology.

In 1977, Nintendo released its first home video game

console, the ***Color TV-Game***, a Pong-style system that allowed users to play simple tennis and paddle games on their home televisions. Though limited in scope, it represented Nintendo's official entry into the home console market. This era of experimentation and innovation ultimately led to the 1980 release of the ***Game & Watch*** series, also designed by Gunpei Yokoi. These handheld LCD devices featured a single game, a digital clock, and an alarm, all in a compact and affordable format. The *Game & Watch* was a global success and marked Nintendo's first major breakthrough in portable gaming-paving the way for Yokoi's later creation of the ***Game Boy***, which would redefine handheld gaming for decades to come.

DOWN THE RABBIT HOLE - LIKE MARIO? THANK THE JAPANESE MAFIA

Long before Nintendo became a global leader in video games, it was a humble card-making company in Kyoto, founded in 1889 by Fusajiro Yamauchi. At the time, Western-style playing cards were often taxed and tightly regulated in Japan due to their strong ties to gambling. To navigate around these restrictions, Yamauchi began producing Hanafuda-a uniquely Japanese deck of floral-themed cards not yet subject to the same legal scrutiny.

Hanafuda cards were not used for a single game, but rather served as the basis for several traditional games, both recreational and competitive. Among these was Oicho-Kabu, a fast-paced gambling game that would become especially popular within Japan's criminal underworld. Resembling Blackjack in principle, Oicho-Kabu required

players to form a hand closest to a total of nine. Its simplicity, combined with its potential for fast wins and losses, made it the perfect gambling game-one that thrived in illegal dens.

By the early 20th century, the Yakuza-Japan’s organized crime syndicates-had adopted Oicho-Kabu as a staple of their gambling operations, particularly in places like Okinawa, where underground gaming flourished. As Hanafuda cards became essential tools in these dens, demand remained strong even when legal restrictions on gambling tightened. This demand allowed Nintendo to stay afloat through difficult economic periods, as they discreetly supplied high-quality playing cards that often ended up in the hands of gamblers and gangsters.

While the company publicly operated as a legitimate card manufacturer, its quiet tolerance-or at least indirect involvement-in gambling circles was an open secret. For years, Nintendo's fortunes rose on the back of Japan’s underground card scene, long before it found a new identity in toys, electronics, and eventually video games.

Nintendo’s modern image as a family-friendly entertainment company may seem worlds apart from its murky origins, but it was these early years-crafted in part through games like Oicho-Kabu and the Yakuza’s patronage-that kept the company alive and positioned it to evolve into a titan of the digital age.

FIRST VIDEO GAME COMPANY - 1970

Nutting Associates, founded in 1970. They published ***Computer Space*** in 1971, which was the first commercially sold arcade video game and marked the beginning of the commercial video game industry. Shortly after this release, the game's creators Nolan Bushnell and Ted Dabney left Nutting Associates to found Atari in 1972. While *Atari* is often recognized as the first major video game company due to its success with ***Pong*** and its influence on the industry, Nutting Associates holds the distinction of being the first company to release a commercial video game.

FIRST COMMERCIAL VIDEO GAME RELEASED - 1971

Computer Space, created by Nolan Bushnell and Ted Dabney in 1971. It was developed under their company, Nutting Associates, marking a significant milestone in video game history. Inspired by the earlier game ***Spacewar!***, Computer Space was an arcade-style game where players controlled a spaceship and battled enemy saucers. Although it wasn't a huge commercial success due to its complexity, it paved the way for the video game industry. Shortly after, Bushnell and Dabney went on to found Atari, which would revolutionize gaming with the release of Pong in 1972.

FIRST VIDEO GAME TO USE SOUND - 1971

Computer Space, released in 1971 by Nolan Bushnell and Ted Dabney before the founding of Atari. This early arcade game included basic analog sound effects such as

explosions and rocket thrusts, marking the first known use of audio in a commercial video game. Although the sounds were simple, they added an important sensory element to the gameplay experience. A year later, Pong (1972) became the first widely successful video game to incorporate sound, using distinctive beeping tones to indicate ball hits and score changes. While Pong is often credited due to its popularity, it was *Computer Space* that first introduced sound into the world of video games.

FIRST COIN OPERATED VIDEO GAME - 1971

Galaxy Game, developed by Bill Pitts and Hugh Tuck and installed at Stanford University in September 1971. Based on the earlier mainframe game ***Spacewar!***, it was a custom-built unit designed to allow players to insert coins to play, making it the earliest example of a video game using a coin-operated system. However, it was not commercially distributed. Shortly after, in November 1971, ***Computer Space*** was released by Nolan Bushnell and Ted Dabney through Nutting Associates. While not the first coin-operated game, *Computer Space* was the first to be commercially manufactured and sold, marking the beginning of the arcade video game industry.

FIRST WIDELY DISTRIBUTED EDUCATIONAL VIDEO GAME -1971

The Oregon Trail - Developed by Don Rawitsch, Bill Heinemann, and Paul Dillenberger. Designed to teach students about 19th-century westward expansion, it

combined historical simulation with strategic decision-making, a groundbreaking approach at the time. Although earlier educational computer programs existed, The Oregon Trail was the first to engage players with meaningful gameplay and consequences in a classroom setting. Its impact grew significantly in 1985 when the Minnesota Educational Computing Consortium (MECC) released the Apple II version, which became widely used in schools across the United States.

In *The Oregon Trail*, players took on the role of a 19th-century pioneer leading a wagon party from Independence, Missouri, to Oregon's Willamette Valley. The game required players to make strategic decisions about supplies, travel pace, and rest, all while managing food, health, and morale. Along the way, players encountered realistic challenges such as river crossings, disease outbreaks, broken wagon parts, and unpredictable weather. Through these gameplay mechanics, the game taught resource management, risk assessment, and the harsh realities of frontier life. It also introduced players to historical geography, pioneer vocabulary, and the day-to-day struggles faced during westward expansion, making it an educational experience wrapped in a compelling simulation.

The Oregon Trail has become a lasting part of gaming culture, evidenced by its often-quoted phrase, "You have died of dysentery," which has entered the general American lexicon and even taken on a life of its own as a popular meme.

SIDE QUEST - MEET MABEL ADDIS

Long before video games like ***Oregon Trail*** were introduced to classrooms, New York teacher and writer Mabel Addis led the creation of the world's first computer-based educational game: ***The Sumerian Game*** (1964-1966). Working with IBM programmer William McKay, Addis wrote the game's narrative, designed its economic simulation, and framed each decision as part of a historical story about life in an ancient Sumerian city-state. Students entered commands through a teleprinter, and between turns a teacher advanced slide-projector images and recorded narration that Addis scripted herself.

Addis is recognized as the first female game designer (non-commercial), the first credited game writer, and one of the earliest practitioners of narrative design-decades before the term existed. *The Sumerian Game* was used in a limited classroom trial and demonstration program, but its code was later lost. What remains are printouts, slides, and a government research report that have since been preserved in the archives of the National Museum of Play in Rochester, New York, allowing modern historians to reconstruct the experience.

By merging story, simulation, and education, Mabel Addis proved that computers could teach through play. Her work established the foundation for every educational and story-driven game that followed, from ***Hamurabi*** and **Lemonade Stand** to *The Oregon Trail* itself.

DOWN THE RABBIT HOLE - EARLY, NON-SCREEN ELECTRONIC GAMES

Before cathode-ray tubes (CRTS) dominated early arcade gaming, a few milestones ran on lights, teletypes, or printouts. They lacked moving on-screen graphics, but they introduced core ideas-simulation, strategy, feedback-that later lit up the screen.

BERTIE THE BRAIN - 1950
Inventor: Josef Kates
Platform: Exhibition computer (Canadian National Exhibition)
A 13-foot-tall tic-tac-toe machine with moves shown on a grid of light bulbs.

NIMROD - 1951
Developer: Ferranti (John M. Bennett; eng. Raymond Stuart-Williams)
Platform: Festival of Britain showpiece
Played Nim with states indicated by rows of lights; buttons for input.

TOP MANAGEMENT DECISION SIMULATION - 1957
Developer: American Management Association
Platform: IBM 650 era (training)
Execs made choices via cards/keyboard; outcomes printed as periodic reports.

HAMURABI (THE SUMER GAME) - 1968
Designer: Doug Dyment
Platform: DEC timesharing (teletype)
Streamlined, text-only resource-management game inspired

END OF PREVIEW

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